

REMARKS

Claims 8, 10-12, 20-25, and 27-30 remain pending in the present application as amended and have been finally rejected. Claims 8, 20, and 25 have been amended. No claims have been added. No new matter has been added.

Claim Rejections

The Examiner has rejected the claims under 35 U.S.C. § 112, first paragraph as not being enabled. Applicants respectfully traverse the Section 112, first paragraph rejection insofar as it may be applied to the claims as amended.

According to the Examiner, “subsequently preventing the container from being removed from said database system unless said typing said database column is reversed” is not supported by the specification and thus is new matter. Without prejudice or waiver, the language has been removed from the independent claims. As a result, Applicants respectfully request reconsideration and withdrawal of the Section 112, first paragraph rejection.

The Examiner has finally rejected the claims under 35 U.S.C. § 103 as being obvious over Murthy et al. (U.S. Patent No. 7,096,224) in view of Sarkar (U.S. Patent No. 6,418,448). Applicants respectfully traverse the Section 103 rejection insofar as it may be applied to the claims as amended. In particular, Applicants respectfully submit that the combination of the Murthy and Sarkar references fail to disclose or even suggest enabling the use of XML instances of different schemas in the same column by typing the column according to an XML schema collection object that references each of such different schemas, particularly in the manner recited in independent claims 8, 20, and 25 as amended.

Preliminarily, Applicants respectfully note that although the claims are rejected under Section 103 in view of the Murthy and Sarkar references, only the Murthy reference is applied against the claims. That is, the Examiner in the present Office Action is entirely silent regarding how the Sarkar reference should or could be applied along with the Murthy reference to make obvious the claims of the present application. Accordingly, Applicants assume that the Section 103 rejection is based on the Murthy reference alone.

The present application is directed toward storing XML instances conforming to not just one but several schemas in the same column of a relational database. In particular, and

as noted in the present application at about paragraphs 0052-0054 (as published), existing database management systems provide support for storing XML data in a relational database store, where one can create a table with one or more XML columns, store XML values in the XML columns, type an XML column using an XML schema namespace, index the XML column, and query against the XML instances.

Previously, only XML data conforming to one schema could be stored in a single column. The column would be 'typed' according to the schema / schema namespace, and any XML instance data that did not conform to the typed schema of the column would generate an error. As a result, in the past, developers would resort to defining a schema or redefining an existing schema so as to in effect shoe-horn XML instance data of two schema types in one column. To recreate the schema each time the needs of storage change, however, is a cumbersome process.

The present application, then, introduces the concept of typing a column according to an XML schema collection object that contains therein references to multiple schemas. Thus, with such an XML schema collection object, storage of XML instances conforming to multiple types of schemas in the same column of a relational database is facilitated. When creating an XML schema collection object or the like in accordance with the present application, a container object is created and multiple schemas are specified. Next, a function call is made which assigns the XML schema collection object to a column or the like to type same with such object. XML instances in the column can then be validated according to any of the schemas represented by the XML schema collection object.

Independent claim 20 as amended recites a method of validating Extensible Markup Language (XML) instances to be stored in a column of a relational database. In the method, a container for a plurality of XML schema namespaces is created, where each XML schema namespace uniquely identifies a collection of element type and attribute names and identifies a location of a schema document corresponding to and defining the uniquely identified collection and thereby specifies a schema for any of a plurality of XML instances conforming to the schema document. Each XML instance is a set of XML data conforming to the schema specified by an XML schema namespace.

At least two XML schema namespaces are placed in the container, and a column of a relational database is typed with the container so as to require that any XML instance stored

in the column conforms to the schema of one of the XML schema namespaces in the container. The typing comprises ensuring that any XML instances existing in the column prior to the typing conforms to at least one schema document identified by a namespace in the container. Prior to storing an XML instance in the column, it is ensured that the XML instance conforms to the schema of one of the XML schema namespaces in the container, and the XML instance is in fact stored in the column upon so ensuring.

Independent claim 8 recites the subject matter of claim 20, albeit in the form of a database system and with some slight modification. Similarly, independent claim 25 recites the subject matter of claim 20, albeit in the form of a computer-readable medium and with some slight modification.

The Murthy reference discloses registering XML schemas in a database system, as with the present application. However, such registering employs mappings of XML types to SQL types, and does not at all recognize that multiple XML instances should or could be stored in a single column of a relational database, as is the case with the claims of the present application. Notably, the Murthy reference does not disclose or even suggest the use of a container that holds a plurality of XML schema namespaces, where each XML schema namespace effectively specifies a schema, or that at least two XML schema namespaces are placed in the container such that the container effectively specifies multiple schemas, as is the case with claims 8, 20, and 25 of the present application. Also, the Murthy reference does not disclose or even suggest that a column of a relational database is typed with the container so as to require that any XML instance stored in the column conforms to the schema of one of the XML schema namespaces in the container, as is recited in claims 8, 20, and 25, and correspondingly so as to allow any XML instance stored in the column to conform to any of the multiple schemas referenced by the container. As a result, the Murthy reference does not disclose or even suggest that such typing of a column of a relational database ensures that any XML instances in the column conform to at least one of the schemas referenced by the container.

The Examiner states in a Response to Arguments section of the Office Action that a Murthy XMLTYPE table is deemed to be a container as recited in the claims. However, Applicants respectfully point out that such a Murthy table is not employed to type any *column* of any table in the Murthy reference, as is required by the claims of the present

application. Further, such a Murthy table also is not employed to ensure that any XML instance is stored in any such column only if such instance conforms to any of several schemas referenced by such Murthy table, as is required by the claims of the present application.

Moreover, the Murthy reference wholly fails to appreciate or even hint at the concept of typing a column according to an XML schema collection object that contains therein references to multiple schemas. Thus, the Murthy reference would not disclose or even suggest that with such XML schema collection objects, storage of XML instances conforming to multiple types of schemas in the same column of a relational database is facilitated, as with the present application.

Thus, for all of the aforementioned reasons, Applicants respectfully submit that the Murthy reference does not make obvious claims 8, 20, or 25 or any claims depending therefrom, including claims 10-12, 21-24, and 27-30. Accordingly, Applicants respectfully request reconsideration and withdrawal of the Section 103 rejection.

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In view of the foregoing Amendment and Remarks, Applicants respectfully submit that the present Application is in condition for Allowance and such action is respectfully requested.

Respectfully submitted,

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